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A new species of *Scutellinia* from MexicoLAURA IZQUIERDO-SAN AGUSTIN¹, SIGFRIDO SIERRA^{1*}, IBETH RODRÍGUEZ-GUTIERREZ², SANDRA CASTRO-SANTIUSTE¹ & JOAQUÍN CIFUENTES^{3,4}¹Lab. Taxonomía de Hongos Tremeloides (Heterobasidiomycetes), Fac. de Ciencias,²Lab. Sistemática y Ecología de Micorrizas, Instituto de Biología,³Lab. Biodiversidad y Biogeografía Ecológica de Hongos, Fac. de Ciencias, &⁴Secc. de Micología Herbario FCME, Fac. de Ciencias,

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ABSTRACT — *Scutellinia ulloae* sp. nov., collected on soil from Temascaltepec in central Mexico near Nevado de Toluca (aka Xinantécatl) volcano, is described and illustrated. A unique tuberculate ascospore ornamentation distinguishes the new species from the approximately 60 other known *Scutellinia* taxa.

KEY WORDS — *Pezizales*, biological diversity, Neovolcanic Axis

Introduction

In his *Scutellinia* monograph, Schumacher (1990) recognized 45 species and 2 subgenera: *Scutellinia* and *Legalia*. More recent descriptions of 16 new taxa — *S. ahmadiopsis* (Zhuang 2005b), *S. alleghenensis* (Moravec 1989), *S. beijingensis* (Zhuang 2005b), *S. citrina* (Yao & Spooner 1995), *S. crinita* var. *discreta* (Matočec et al. 2005), *S. fujianensis* (Cao & Moravec 1989), *S. jejuensis* (Han et al. 2010), *S. jilinensis* (Yu et al. 2000), *S. kerguelensis* var. *microspora* (Zhuang 2005b), *S. korfiana* (Zhuang 2005a), *S. laevispora* (Moravec 1997), *S. orientalis* (Choi et al. 2013), *S. sinensis* (Liu & Peng 1996), *S. sinosetosa* (Zhuang & Wang 1998), *S. totaranuiensis* (Moravec 1996), and *S. tuberculata* (Matočec 2000) — have brought the world total to approximately 60 recognized species.

With a surface area of two million km², Mexico is one of world's five most megadiverse countries, encompassing 10% of the world's biodiversity (Sarukhán 1995). Guzmán (1998) has estimated the number of fungal species in Mexico at close to 200,000. In Mexico, six species of *Scutellinia* have been recorded:

S. asperima (Seaver) Le Gal, *S. cubensis* (Berk. & M.A. Curtis) Gamundí, *S. scutellata* (L.) Lambotte, *S. setosa* (Nees) Kuntze, *S. trechispora* (Berk. & Broome) Lambotte, and *S. umbrorum* (Fr.) Lambotte (Denison 1959; Vázquez del Mercado 1977; Welden et al. 1979; Frutis & Guzmán 1983; Chacón & Guzmán 1984; Guzmán-Dávalos & Trujillo-Flores 1984; Portugal et al. 1985; Bautista et al. 1986; Medel & Chacón 1988; Téllez-Bañuelos et al. 1988; Esqueda-Valle et al. 1992; Pompa-González & Cifuentes 1991; Montañez 1999; Valenzuela et al. 2004; Chanona-Gómez et al. 2007). We describe below another new species originally collected in 1988 from the southern part of the Neovolcanic Axis belonging to Estado de Mexico (Ferrusquía-Villafranca 1993).

Materials & methods

The only specimen of our new species (with three apothecia) was examined using standard mycological techniques (Schumacher 1990; Cifuentes et al. 1986; Izquierdo-San Agustín 2008) and deposited in the Herbarium FCME. The type specimen was prepared for scanning electron microscopy according to the methods described by Zhuang (2005b). Colors are from Methuen Handbook of Colour (Kornerup & Wanscher 1978). We attempted to extract DNA for molecular analysis. One apothecium was used in this process and no electrophoretic bands were detected even after PCR amplification. We decided not to sacrifice more apothecia.

Taxonomy

Scutellinia ulloae L. Izquierdo, S. Sierra, Rodr.-Gut., C.-Santiuste & Cifuentes, *sp. nov.*

FIG. 1

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Differs from *Scutellinia Chiangmaiensis* by a spore ornamentation of cylindrical to obpyriform tubercles that are slightly constricted at the base and slightly connected by small ridges that do not form a true reticulum.

TYPE — Mexico, Estado de Mexico, Mpio. de Temascaltepec, km 71 carretera Toluca-Tejupilco, desviación a Presa Chica (19°02'14"N 100°03'00"W), alt. 1950 m, on soil, ground, 23 IX 1988, Hilario y Villegas 1130 (Holotype, FCME 14557).

ETYMOLOGY — In honor to the eminent Mexican mycologist Dr. Miguel Ulloa, who has contributed extensively to the knowledge of Mexican ascomycete biota.

APOTHECIA discoid, sessile, 1–4 mm in diam., hymenium surface reddish orange (Methuen 7A8), receptacle (external surface) off-white, side straight and cartilaginous consistency, covered with brown hairs; MARGINAL HAIRS 648–1224 × 18–35(–41) µm, wall 3–3.5 µm, brown, unbranched, non-septate, although there are bifurcate bases, there is no difference between marginal hairs and lateral hairs; ECTAL EXCIPULUM of subangular, isodiametrical, hyaline cells, with slightly thickened walls, 40–45 µm in diam.; MEDULLARY EXCIPULUM composed of broad and short angular cells, 9–12 µm in diam.; ASCI

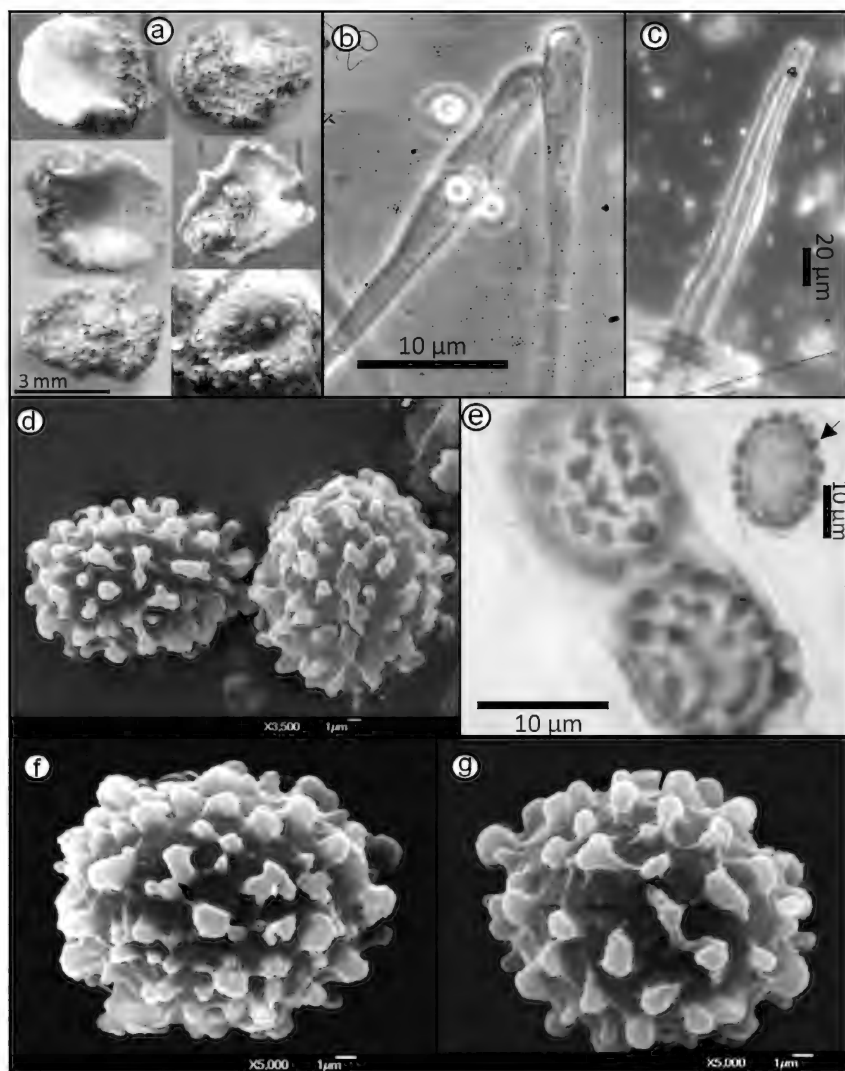


FIGURE 1. *Scutellinia ulloae* (holotype, FCME 14557). (a) Dried apothecial specimens; (b) paraphyses; (c) marginal hair; (d, f, g) ascospores in SEM; (e) ascospores in LM (phase contrast; arrow shows spore wall detail).

8-spored, operculate, cylindrical, $240\text{--}272 \times 15.6\text{--}31.2$ µm wide, inamyloid; ASCOSPORES ellipsoid $(15\text{--})17\text{--}17.5 \times 12\text{--}13(\text{--}14)$ µm, $Q = 1.38$, with one guttule to multiguttulate, SPORE ORNAMENTATION: tubercles $2\text{--}2.5$ µm high $\times$

2 µm broad, cylindrical to obpyriform, slightly constricted at the base, some interconnected by slim line when viewed by SEM, spore ornamentation when stained with cotton blue easily visible in light microscopy. PARAPHYSES slender, 2–3 µm wide, clavate and 5.6–8.4 µm wide at the apex, septate, exceeding asci by 15–19 µm.

Discussion

Following Schumacher (1990), the species closest to *Scutellinia ulloae* is *S. chiangmaiensis* T. Schumach.; however, the spore ornamentation differs significantly. In *S. chiangmaiensis* the ornamentation is tuberculo-reticulate, giving an alveolate spore surface, while in *S. ulloae* tubercles are cylindrical to obpyriform, slightly constricted at the base and are slightly connected by small ridges that do not form a true reticulum. The vegetation type is mixed deciduous forest for *S. chiangmaiensis* and coniferous forest for *S. ulloae*.

The type specimen (FCME 14557) was initially misdetermined by Pompa-González & Cifuentes (1991) as *S. diaboli* (Velen.) Le Gal (= *S. trechispora*). The record of *S. trechispora* in Mexico is no longer correct and should be deleted.

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